Midpoint formula

To find the midpoint between two points use the formula

$$\text{midpoint} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$

The midpoint **must** be written as an ordered pair (x, y)

Ex: Find the midpoint between $(-10, 18)$ and $(7, 18)$

$$\text{Midpoint} = \left(\frac{-10+7}{2}, \frac{18+18}{2}\right)$$

$$= \left(\frac{-3}{2}, \frac{36}{2}\right)$$

$$= \left(-\frac{3}{2}, 18\right)$$

EX: Find the endpoint if the midpoint is $(2,5)$ and the other endpoint is $(-8,7)$

$$\text{Midpoint} = \left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$$

$$(2,5) = \left(\frac{-8+x_2}{2}, \frac{7+y_2}{2}\right)$$

$$2 = \frac{-8+x_2}{2} \qquad 5 = \frac{7+y_2}{2}$$

$$2 \cdot 2 = \frac{-8+x_2}{2} \cdot 2 \qquad 2 \cdot 5 = \frac{7+y_2}{2} \cdot 2$$

$$4 = -8+x_2 \qquad 10 = 7+y_2$$

$$+8 \quad +8 \qquad -7 \quad -7$$

$$12 = x_2 \qquad 3 = y_2$$

Endpoint = $(12, 3)$